STATION 01 Earth as a Habitat — From Origin to Present

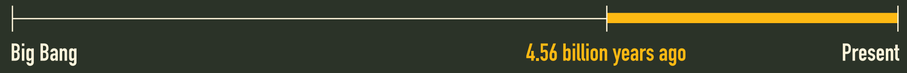
NASA

WHY IS EARTH WET AND ALIVE? Our blue Earth is shown with its lifeless Moon. Impacts pummeled the early Earth (and Moon) before life emerged. The Moon preserves a record of those events because it lacks an atmosphere and plate tectonics. Impacts also affected Mars and other planets.

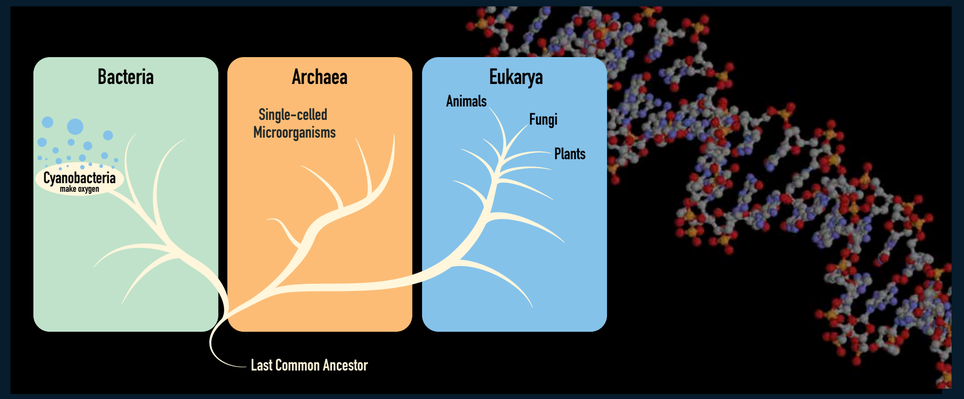
Earth is unique within our Solar System – wet and teeming with life. How did life begin here? How has the environment changed since Earth's formation? Why is Earth a life-sustaining habitat now? Can life exist elsewhere in the Solar System and in the Universe? This "walk through time" illustrates critical steps along the pathway to life today, and scientific efforts at Goddard to address them.

↑ THE SPIRAL TIMELINE

The spiral represents the timeline of Earth history from its formation about 4.6 billion years ago to the present. Each station in this exhibit describes a different epoch and has a distinctive 3D iconic object above the station and on the spiral. The number of a station (2, 3, ...) identifies the order of its appearance in this Astrobiology Walk.



Life and its Instruction Codes



THREE DOMAINS OF LIFE: All living organisms store an instruction set (DNA, background) used in reproduction and function. The DNA molecule is made of hydrogen, oxygen, nitrogen, carbon and phosphorus.

Astrobiologists define life as cell-based organisms that can reproduce and evolve. These include single-celled organisms such as bacteria and archaea that could survive in extreme environments on early Earth and now. Scientists search for pathways that could lead from chemical mixtures to the basic building blocks of living organisms.